

ATOMIC ENERGY

new letter

THE FIRST AND ONLY

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

Dear Sir:

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A further increase in United States' atomic energy spending is planned for the fiscal year 1955, which starts this July 1st, the Budget Message to Congress of President Eisenhower has now shown. Expenditures of some \$2,425,000,000 are planned for fiscal 1955, as compared with \$2,200,000,000 in the current fiscal year; it is the largest such sum ever requested by the USAEC for its program. While less new construction will be started than in recent years, spending on construction of projects already under way will continue at a high rate. The President also pointed out that operating costs will rise from \$912,000,000 in the present fiscal year, to \$1,182,000,000 in the 1955 fiscal year; this will be caused by the expansion in operations at Oak Ridge, Tenn., Paducah, Ky., Portsmouth, Ohio, and Savannah River, S. C. Increased amounts of uranium ores and concentrates will be purchased to meet the greater requirements for raw materials for this enlarged productive capacity, the President pointed out.

The Nautilus, the submarine which is to be propelled by a nuclear reactor, was launched last week at the Electric Boat yards at Groton, Conn. It is expected that the propelling mechanism will be fully installed in the craft by mid-Summer. (The hull was built by Electric Boat, a division of General Dynamics Corp., while the reactor was produced by Westinghouse Electric Corp. The research and development work which preceded construction was carried on in the USAEC's national laboratories, in the Navy Department's research facilities, and through many other USAEC-supported research activities.)

The fourth Scintillation Counter Symposium is now (Jan. 26th & 27th) being held in Washington, D.C., jointly sponsored by the Institute of Radio Engineers, National Bureau of Standards, and USAEC. Papers cover scintillation counter spectrometry; photomultipliers and phosphors; and general subjects.....At Cleveland, Ohio, May 17-19, the annual meeting of the Radiation Research Society is to be held. In addition to submitted papers, a symposium on "The Role of Nuclear Damage in Radiation Induced Cell Injury and Death" will be conducted. Inquiries concerning attendance, or papers to be submitted, should be made to the secretary of the Society, Dr. A. Edelman, Brookhaven National Laboratory, L. I.

The Shawnee steam plant near Paducah, Ky., (operated by the Tennessee Valley Authority) which is being built to furnish power to new facilities of the USAEC, now has four generating units, each of 150,000-kilowatts, in operation. The fourth unit went into commercial operation recently; six more units remain to be completed. The units now completed represent the plant originally designed by TVA to meet the initial requirements of the USAEC at Paducah. Following the enlargement at Paducah, TVA was called upon to more than double the original supply, providing more than 1,200,000-kw. The cost per kilowatt of capability for the completed plant is estimated at \$145. A private company, Electric Energy, Inc., will furnish the USAEC approximately 735,000-kw. from its plant now under construction at Joppa, Ill.

BUSINESS NEWS...in the nuclear energy field...

CONTRACTS AWARDED: A \$65,000 contract for modification of facilities at the USAEC's Arco, Idaho nuclear reactor testing station has now been awarded Henry J. Kaiser Construction Co., Oakland, Calif. The work will be done at the chemical processing plant at the station, and includes fabrication of approximately 10,000-ft. of stainless steel piping and installation of other equipment.

FEED MATERIALS PRODUCTION CENTER NEARS COMPLETION: SURPLUS OFFERED: At the USAEC's nearly completed \$78,000,000 feed materials production center, at Fernald, Ohio, several hundred thousand dollars worth of surplus materials and equipment is to be auctioned off this February 2nd. Catalogues listing the equipment may be obtained from the Effron Corp., Traction Building, Cincinnati, the auctioneers. The surplus properties offered include electrical supplies and equipment; small tools and equipment; gas operated electric welders; welding cable; etc. (Sale arrangements were handled by the George A. Fuller Co., New York, prime construction contractor at the production center.)

URANIUM MINING FIELD ENTERED BY FORMER AUTOMOBILE MANUFACTURER: Joseph W. Frazer, formerly associated with Henry J. Kaiser in the Kaiser-Frazer Corp., automobile manufacturers, has become associated with a group of New York, Salt Lake City, and Houston businessmen who have formed and privately financed the Standard Uranium Corp. The firm has bought an option to purchase for \$2 million some fifteen uranium claims covering 640-acres, in San Juan County, Utah, near Moab. The company has paid \$50,000 to the owners-Charles A. Steen, and his original backer, William McCormick--and the option will be exercised in June on payment of an additional \$450,000. The remainder of the purchase price is payable in installments over a number of years. (These claims adjoin the Mi Vada uranium claims, Steen's original discovery, now a profitable producer: this LETTER, Vol. 10, No. 11, page 2.) Both Steen and McCormick will be on the board of Standard Uranium, according to Mr. Frazer, who will be chairman and president. Fred D. Gearhart, of the New York investment banking house of Gearhart and Otis, will be vice-president. Other directors will be Frank Cerie, investment banker of Houston, Texas; K. Ralph Bowman, Salt Lake City; and L. H. Cullen, an oil well operator of Houston. Mr. Frazer stated that some \$100,000 was being spent on drilling to explore the claims.

NEGOTIATIONS WITH URANIUM PRODUCERS NOW UNDER WAY: Negotiations are now being conducted by the Canadian-government-owned Eldorado Mining & Refining, Ltd., with several uranium mining companies, concerning special price deals in specific situations where the present guaranteed price would not assure an adequate profit. (The guaranteed price is \$7.25 per pound of contained uranium oxide; subsidies to be granted may raise the price to as high as \$11). Such firms as Gunnar Gold Mines, Rix-Athabasca Uranium Mines, Pronto Uranium Mines, and Center Lake Uranium Mines, have now reached the stage where they have indicated sufficient tonnage and consequently are interested in determining the price that they might expect to get. (A very large part of the ores treated and concentrates recovered in Canadian mines are purchased by the United States Atomic Energy Commission, and the price determined by the United States is based upon the need for uranium by the U.S.'s atomic energy program.)

GENERAL ELECTRIC'S NUCLEAR STAKE LARGEST IN U. S.: Constantly expanding its activities in the field of nuclear energy, the General Electric Co. (U.S.) has now become the topmost firm in this country in overall nuclear operations, a year end review of industrial companies (Union Carbide, Du Pont, etc.) in the nuclear program seems to indicate. G-E's activities include the Hanford Atomic Products Operation, Richland, Wash., producing plutonium; the Knolls Atomic Power Laboratory, Schenectady, New York, the largest project being developed there a nuclear reactor for an experimental submarine; and G-E's aircraft nuclear propulsion department, Evandale, Ohio, where a nuclear reactor to propel an aircraft is being developed. (All such G-E work is as a USAEC-contractor.)

WASHINGTON OFFICE OPENED BY FIRM PROMINENT IN NUCLEAR ENERGY INDUSTRY: An office in Washington, D.C., has now been opened by Vitro Corp. of America, large supplier to the USAEC. Edward G. Littell, assistant to the Vitro president, and Charles J. Roggi, foreign projects representative, will occupy the office.

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear lab & plant...

FROM THE MANUFACTURERS: New thin glass wall jacketed Geiger counter, Model 71, Mark 1, is now available from this manufacturer. The counter is recommended by the maker for monitoring radioactivity where processes involving continuous flow are involved, i.e., engine wear studies, etc. The counter, which measures 1-1/8-in. in diameter by 7 1/4-in. long, has an active anode length of 3-in. Operating threshold is 800-to 1000-volts. Window thickness is 50 mg per sq. cm.-- Radiation Counter Laboratories, Skokie, Ill.

Nine new radiocarbon compounds are offered by this producer, making a total of 94 carbon-14 labeled compounds so available, from this source. It is pointed out that one of these new compounds, maleic-1-C-14 anhydride, is an important synthetic intermediate which forms polymers with many compounds, and thus is useful in studying the mechanism of these polymerizations as well as their structures. It is also suggested that three of the new compounds will be of special interest to metabolic chemists. Succinic-1-C-14 acid, and fumaric-1-C-14 acid are intermediates in several biological cycles, while phenylacetic-1-C-14 acid is a breakdown product of phenylalanine, and thus is useful in amino acid metabolism. Five of these new compounds are C-14 labeled fats, fatty acids, or derivatives. They should be of some assistance to people developing new uses for materials derived from natural fats and oils, chemists interested in the metabolism of fats, and oil chemists. -- Nuclear Instrument & Chemical Corp., Chicago 10, Ill.

NEW BOOKS & OTHER PUBLICATIONS...on nuclear topics...

British Atomic Factories. The role of Great Britain in development of nuclear energy, told in a popular style. Observes that twenty years from now "it is suggested that efficient power breeders (reactors) will have been developed to the point at which they can be built in numbers great enough to achieve the ultimate goal: the generation of all the country's electricity". The booklet also noted that "extensive studies have convinced scientists and engineers that nuclear energy should be able to make a substantial contribution to the electricity supply of the country at a cost comparable with the cost of coal-generated electricity." 100-pages. --H. M. Stationery Office, London, Eng. (5s. 6d.)

The Atomic Submarine and Admiral Rickover, by Clay Blair, Jr. A popular account of the design and construction of the nuclear powered submarine, the Nautilus, which is nearing completion in the U. S. 277-pages.--Henry Holt & Co., New York 17, N. Y. (\$3.50)

NOTES: The following U. S. Government publications are obtainable from Sup't. of Documents, Wash. 25, D.C., at prices stated: (1) Federal Civil Defense Administration Manual M25-1, revised; complete to Oct. 26, 1953. Should be of utility to those concerned with civil defense against atomic weapons. 270 pages. \$1.25. (2) Results of reconnaissance for radioactive minerals in parts of Alma district, Park County, Colo. Circular 294, of the Geological Survey. (Work done for USAEC by GS.) 9 pages. n/c.

The publications which follow are available at no charge from the issuing organizations: (1) Use of Gamma Ray Emitters for Industrial Radiography, by H. R. Isenburger, president, St. John X-ray Laboratory, Califon, N. J. A reprint from the Dec., 1953, "American Foundryman". (2) The "Nucleus", issue number 4. An 8-page publication issued by Nuclear Instrument & Chemical Corp., Chicago 10, Ill.

The following publication may be obtained from Office of Technical Services, Wash. 25, D.C., at price noted: Gamma radiation from interaction of 5.3 Mev neutrons with lead, by V. E. Scherrer, B. A. Allison, and W. R. Faust. U. S. Naval Research Laboratory. 4 pages. 25¢.

Available from the Library of Congress, Publication Board Proj., Wash. 25, D.C., are the following publications: (1) Natural radiocarbon-14 measurement and application. Work done at Columbia University's Lamont Geological Observatory, Palisade, N.Y. (In several parts.) a.-Quarterly progress report no. 1; Sep't. 1950. Microfilm, \$1.75; photostat, \$2.50. b.-Quarterly progress report no. 6; Oct. 1951. Microfilm, \$1.75; photostat, \$2.50. c.-Quarterly progress report no. 8; May 1952. Microfilm, \$1.75; photostat, \$2.50.

RAW MATERIALS...radioactive minerals & ores...

UNITED STATES: Some seven Colorado firms and individuals, producing or exploring for uranium, were the recipients of Defense Materials loans in the last quarter of 1953. These contracts were executed between this government agency and: American Mining Co., Gilpin; Rare Earths Mining Co., Gunnison; H.C. Gamblin, and J.M. Knowles, San Miguel; C.L. Neilson, San Miguel; Shenandoah-Dives Mining, San Juan; Fred Schwartzwalder, Jefferson; and J.R. Simplot Co., Montrose.

CANADA: A staking rush in the Beraud Township district, which is south of Cadillac, Quebec, has now occurred, following the reports of two radioactive finds in this area, one of which was taken under an examining option by Canadian Malartic Gold Mines. Companies with recorded claims include Newmont Mining Corp., New Jersey Zinc Explorations, Powell Rouyn Gold Mines, Falconbridge Nickel Mines, and Barnat Mines.....A block of 36-claims in the Manitouwadge district of Northwestern Ontario has now been acquired by Orchan Uranium Mines. An electromagnetic survey is planned by Orchan for this area. No work is being carried out by Orchan at present on its original property near Gunnar Gold Mines, in the St. Mary's Channel section of the Beaverlodge district, Northern Saskatchewan. Preliminary work last Summer indicated radioactivity at several points, at this property.....The \$1,200,000 mining program, being carried out by Eldorado Mining & Refining, on the property of Radiore Uranium Mines, has so far brought roads and power lines, to the Radiore property. An electric mining plant was also installed, and headframe erected. (In Dec. 1951, Government-owned Eldorado made a lease agreement with Radiore under which it undertakes all expense in developing the Radiore property to the production point, and will also purchase all ore on a royalty basis at the rate of 50¢/lb. of contained uranium oxide in all ores shipped.)

RESEARCH & DEVELOPMENT...in the nuclear energy field...

New Reactor To Be Built: A low-power "swimming pool" type reactor is now to be constructed at Pennsylvania State University; it will be operated for nuclear research and the training of students. The reactor, which will operate at a power level of 100-kilowatts, will be cooled and moderated with ordinary water, and will use enriched uranium fuel. These fuel elements will be suspended in a pool of water sufficiently deep to serve as a shield against the radiation produced by the reactor. (A similar "swimming pool" facility, the bulk shielding test reactor, has been operating at Oak Ridge National Laboratory since 1952. The experience there indicates that this type of reactor is relatively inexpensive, safe to operate, and easy to maintain.) Fissionable material will be supplied by the USAEC. This is the second reactor for which such material will be supplied by the USAEC; the first, built by the University of North Carolina, began operation in September, 1953.

North American Aviation-Built Reactor in Operation: The self-contained, "water boiler" type nuclear reactor, designed and built by North American Aviation, Downey, Calif., recently went into operation at the Livermore, Calif., facility of the USAEC. It will be operated by California Research & Development Co., contractor to the USAEC at Livermore. The reactor will be fueled with uranyl sulfate, enriched in uranium-235, in a water solution. About four gallons of this material will be in the reactor sphere, which is constructed of stainless steel. The power level at which the reactor will normally be operated is 100-watts. Operating at this level, 1 billion thermal neutrons per square centimeter per second will be available for experimental use. Design of the reactor is such that it can accommodate an increase in power level to 2000-watts for future experiments. Research scheduled for the reactor includes test work with various materials and components being studied for possible application to atomic energy equipment and processes.

Numerous Research Grants of USAEC Still in Effect in Pacific Northwest: Some 30 research projects, totaling approximately one-half million dollars, are still in progress at educational institutions in the Pacific Northwest, it has now been shown by the USAEC. (To date, approximately \$2 million for research has gone to such institutions there). Participating schools are the University of Washington; State College of Washington; University of Oregon; Oregon State College; Reed College; and the University of Idaho.

ATOMIC PATENT DIGEST...latest U. S. grants...

Ion accelerating and focusing system. A system of accelerating and focusing electrodes for electromagnetically operated equipment for the separation of isotopes. Comprises (in part) an inner electrode adapted to be maintained at a high positive potential, and having an opening for the passage of ions; intermediate electrode spaced from the inner electrode and having an opening aligned with the opening in the inner electrode; and an outer electrode positioned in overlapping spaced relation with respect to the intermediate electrode. The outer electrode has an opening aligned with, and of larger size than, the opening in the intermediate electrode for the passage of ions. U. S. Pat. No. 2,665,384 issued January 5th, 1954; assigned to United States of America (USAEC). (Inventor: Hubert P. Yockey.)

Radioactivity well logging. The method of distinguishing between a sand and a limestone formation traversed by a well bore hole. Comprises (in part) bombarding the formation with neutrons from a source in the hole at a position opposite the formation for a period commensurate with the lifetime of radioactive limestone; moving the source to a second position remote from the first position so that the formation will be out of the range of neutrons from the source; and then, from the first position, measuring over a time of the same order as this period, the intensity of any radioactivity induced in the formation by the previous bombardment to determine if the intensity decreases during at least a portion of the measuring time according to a lifetime indicating that limestone was the substance made radioactive by the bombardment. U. S. Pat. No. 2,665,385 issued January 5th, 1954; assigned to The Texas Company, New York, N. Y. (Inventor: Gerhard Herzog.)

Well radioactivity logging apparatus. In part, the combination of an enclosed cartridge adapted to be lowered into a bore hole with a low current consumption radioactivity responsive device in the cartridge comprising an envelope having an anode and cathode, and a source of electrical energy consisting of an isolated, relatively high capacitance low loss condenser in the cartridge connected to the anode and to the cathode of this device and adapted to be charged electrically for this purpose. Output means in the cartridge furnish signals indicative of the radioactivity detected by the device. U. S. Pat. No. 2,665,386 issued January 5th, 1954; assigned to Schlumberger Well Surveying Corp., Houston, Tex. (Inventors: Shelley Krasnow, and Meyer Joseph Test.)

Device for applying liquid to sheets or webs. Comprises (in part) a liquid impervious plate member, and a liquid impervious rod member conforming to the plate along a line and spaced from the plate a distance such as to accommodate a web substantially tightly. Means are provided to deposit a liquid on the web adjacent to this line of contact, as well as means for passing the web between the rod and plate. U. S. Pat. No. 2,665,660 issued January 12th, 1954; assigned to United States of America (USAEC). (Inventor: Robert G. Olden.)

Method of testing borehole logging instruments, by simulating conditions of porosity and hydrogen content in the formations which surround a borehole. Comprises, in part, surrounding the instrument with a mass of sand, and varying the amount of hydrogen in the pore spaces of the sand mass while also varying the bulk density of the mass in accordance with the changes in the bulk density of the formations which it is desired to simulate, by saturating the mass with a mixture of two liquids, one containing hydrogen and the other having a low capture cross section for slow neutrons. U. S. Pat. No. 2,666,142 issued January 12th, 1954; assigned to The Texas Company, New York, N.Y. (Inventors: Gerhard Herzog and Karl C. ten Brink.)

A method of electroradiography comprising (in part) the steps of charging the surface of a plate having a semiconductive selenium coating, exposing the charged plate to X-radiation while an object to be tested is positioned between the X-ray source and the charged selenium plate, dusting the surface of the exposed plate with a resinous material, transferring the image thus produced to a second surface, and fixing the transferred image to the second surface. U. S. Pat. No. 2,666,144 issued January 12th, 1954; assigned to The Battelle Development Corp., Columbus, Ohio. (Inventors: Roland M. Schaffert, Robert C. McMaster, and William E. Bixby.)

Sincerely,

The Staff,
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